of the third row, delete "Leu 36" and insert therefor --Leu 37--, in the right hand column of the fourth row, delete "Asn 37" and insert therefor --Asn 38--.

At page 19, lines 18–20, delete "3H thymidine" and insert therefor —^{3}H–thymidine—.

In the Claims

Please amend claims 1, 11, 12, 15 and 16 as follows.

1. (Amended) A mutant Streptococcal pyrogenic exotoxin type C (SPE–C toxin) or fragment thereof, wherein the mutant has at least one amino acid change and is substantially nonlethal compared with a protein substantially corresponding to wild type SPE–C toxin.

In claim 11, line 2, after "SPE–C", first occurrence, insert —toxin—.

In claim 12, line 1, after "SPE–C", insert —toxin—.

In claim 15, line 2, after "SPE–C", insert —toxin—.

16. (Amended) A method for reducing one or more symptoms associated with toxic shock comprising: administering a vaccine according to claim 11 to an animal.

Please add claim 17 as follows.

17. (New) The mutant specie SPE–C toxin of claim 3, wherein the at least amino acid substitution comprises the substitution of tyrosine–15 to alanine or serine; the substitution of tyrosine–17 or alanine or serine; the substitution of asparagine–38 to serine or alanine; the substitution of tyrosine–15 to serine or alanine and of asparagine–38 to serine or alanine; the substitution of tyrosine–17 to serine or alanine and of asparagine–38 to serine or alanine; the substitution of aspartic acid–12 to alanine; the substitution of asparagine–38 to aspartic acid; or the substitution of tyrosine–15 to alanine, histidine–35 to alanine and asparagine–38 to aspartic acid.

REMARKS

Applicants have received and reviewed an Office Action dated October 4, 1999. By way of response, Applicants have amended claims 1, 11, 12, 15 and 16 and added claim 17. No new

wherein at least one of the substituted amino acids is aspartic acid-12, tyrosine-15, tyrosine-17, histidine-35, or asparagine-38[, lysine-135, lysine-138, tyrosine-139, or aspartic acid-142].

4. (Once Amended) The mutant SPE-C toxin of claim 3, wherein the at least one amino acid substitution comprises the substitution of aspartic acid-12 to alanine, glutamic acid, asparagine, glutamine, lysine, arginine, serine, or threonine; the substitution of tyrosine-15 to phenylalanine, alanine, glycine, serine, or threonine; the substitution of tyrosine-17 to phenylalanine, alanine, glycine, glutamic acid, lysine, arginine, aspartic acid, serine, or threonine; the substitution of histidine-35 to phenylalanine, alanine, glycine, glutamic acid, lysine, arginine, aspartic acid, tyrosine, phenylalanine, serine, or threonine; or the substitution of asparagine-38 to alanine, aspartic acid, glutamic acid, lysine or arginine[; the substitution of lysine-135 to glutamic acid or aspartic acid; the substitution of lysine-138 to glutamic acid or aspartic acid; the substitution of tyrosine-139 to phenylalanine, alanine, glycine, glutamic acid, lysine, arginine, aspartic acid, serine, or threonine; or the substitution of aspartic acid-142 to alanine, glutamic acid, asparagine, glutamine, serine, threonine, lysine or arginine].

5. (Once Amended) The mutant SPE-C toxin of claim 4, wherein the at least one amino acid substitution comprises the substitution of aspartic acid-12 to alanine, the substitution of tyrosine-15 to alanine, the substitution of tyrosine-17 to alanine, the substitution of histidine-35 to alanine, or the substitution of asparagine-38 to aspartic acid[, the substitution of lysine-135 to aspartic acid; the substitution of lysine-138 to aspartic acid; the substitution of tyrosine-139 to alanine, or the substitution of aspartic acid-142 to asparagine].

7. (Once Amended) The mutant SPE-C toxin of claim 6, wherein the substitutions are tyrosine-15 to alanine and asparagine-38 to alanine.

9. (Once Amended) The mutant SPE-C toxin of claim 8, wherein the substitutions are tyrosine-17 to alanine and asparagine-38 to alanine.

17. (Once Amended) The mutant [specie] SPE-C toxin of claim 3, wherein the at least amino acid substitution comprises the substitution of tyrosine-15 to alanine or serine; the substitution of tyrosine-17 [or] to alanine or serine; the substitution of asparagine-38 to serine or alanine; the substitution of tyrosine-15 to serine or alanine and of asparagine-38 to serine or alanine; the substitution of tyrosine-17 to serine or alanine and of asparagine-38 to serine or alanine; the substitution of aspartic acid-12 to alanine; the substitution of asparagine-38 to aspartic acid; or the substitution of tyrosine-15 to alanine, histidine-35 to alanine and asparagine-38 to aspartic acid.

18. (New) The mutant SPE-C toxin of claim 6, wherein the substitutions comprise tyrosine-15 to alanine and asparagine-38 to aspartic acid.

19. (New) A mutant SPE-C toxin comprising one to six amino acid substitutions;

wherein at least one of the substituted amino acids is aspartic acid-12, tyrosine-15, tyrosine-17, histidine-35, or asparagine-38; and

wherein the mutant is substantially nonlethal compared with a protein substantially corresponding to wild type SPE-C toxin.

20. (New) A vaccine for protecting against at least one biological activity of wild-type SPE-C toxin comprising: an effective amount of at least one mutant SPE-C toxin according to claim 19.

21. (New) A pharmaceutical composition comprising: a mutant SPE-C toxin according to claim 19 in admixture with a physiologically acceptable carrier.

22. (New) A method for protecting an animal against at least one biological activity of a wild type SPE-C toxin comprising: administering a vaccine according to claim 20 to an animal.

23. (New) A method for reducing one or more symptoms associated with toxic shock comprising: administering a vaccine according to claim 20 to an animal.